

**School of Engineering and Natural Sciences / Computer Engineering (English)**

**2022 - 2023 Academic Year**

**MICROPROCESSORS**

**Syllabus**

<b>Course Description</b>					
<b>Name</b>	<b>Code</b>	<b>Semester</b>	<b>T+A Hour</b>	<b>Credit</b>	<b>ECTS</b>
MICROPROCESSORS	COE3220530	Spring Semester	3+2	4	8
<b>Prerequisites Courses</b>	ELEKTRİK DEVRELERİ; MÜHENDİSLER İÇİN PROGRAMLAMA				
<b>Recommended Elective Courses</b>					
<b>Language of Instruction</b>	English				
<b>Course Level</b>	First Cycle (Bachelor's Degree)				
<b>Course Type</b>	Required				
<b>Course Coordinator</b>	Assist.Prof. Mehmet KOCATÜRK				
<b>Name of Lecturer(s)</b>	Assist.Prof. Mehmet KOCATÜRK				
<b>Assistant(s)</b>					
<b>Aim</b>	The aim of this course is to evaluate microprocessor architecture and design principals of microprocessor-based system design.				
<b>Course Content</b>	This course contains; Introduction, number systems,Computer overview - memory,Memory Design,CPU overview,iInstruction format,Addressing methods,Instruction types-I,Instruction types - II,Parallel communication interface,Serial communication interface,Subroutines,Interrupts,Stack,Coding examples and applications,Development of microprocessor based systems.				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
1. will be able to evaluate the working principle of microprocessors.			1, 10, 12, 13, 14, 15, 16, 2, 3, 4, 6, 8, 9	A	
1.1. explains central processing unit, addressing methods and instruction set.			1, 12, 13, 4	A	
1.2. describes input-output interface.			1, 12, 13, 15, 2, 3, 4, 8, 9	A	
1.3. expresses stack the terms such as process, subroutine and interrupt.			1, 12, 13, 14, 2, 3, 4, 6, 9	A	
2. will be able to design digital systems using microprocessors.			1, 10, 13, 14, 4, 8, 9	A	
2.1. programs microprocessors using assembly and C programing language.			1, 10, 12, 14, 16, 3, 6, 8, 9	A	
2.2. debugs programs prepared in assebmly and C programming language.			1, 12, 13, 14, 2, 4, 6	A	
2.3. control peripheral components using microprocesses input-output interfaces.			1, 13, 14, 9	A	
3. will be able to design real-time systems.			1, 10, 13, 14, 15, 2, 3, 4, 6	A	
3.1. describes real-time system and its design requirements.			1, 13, 14, 2, 9	A	
3.2. explains the term, stack.			1, 10, 12, 14, 15, 4, 6, 8	A	
3.3. expresses the term, interrupt, and realize real-time control using interrupts.			1, 14, 15, 3, 4, 6, 8, 9	A	
<b>Teaching Methods</b>	1: Lecture, 10: Brainstorming, 12: Case study, 13: Experiment / Laboratory, 14: Self-Study, 15: Problem solving, 16: Project Based Learning, 2: Question - Answer, 3: Discussion, 4: Exercise, Practice, 6: Role Model, Making an example, 8: Teamwork, 9: Simulation				
<b>Assessment Methods</b>	A: Written Exam				
<b>Lecture Schedule</b>					
<b>Sequenc e</b>	<b>Topics</b>	<b>Preliminary Preparation</b>			
1	Introduction, number systems				
2	Computer overview - memory				
3	Memory Design				
4	CPU overview,iInstruction format				
5	Addressing methods				
6	Instruction types-I				
7	Instruction types - II				
8	Parallel communication interface				
9	Serial communication interface				
10	Subroutines				
11	Interrupts				
12	Stack				
13	Coding examples and applications				
14	Development of microprocessor based systems				
<b>Evaluation Methods</b>		<b>Weight(%)</b>			
Midterm Exam		30			
General Exam		70			

<b>Resources</b>
1. PIC16F87XA Data Sheet 2. MPLAB X IDE User's Guide 3. MPLAB XC8 C Compiler User's Guide 4. Timothy D. Green, Embedded Systems Programming with the PIC16f877. 5. Nursel Ak, Herkes için PIC Programlama, Alfa, 2009.